

CLAIMS

1. A receptacle for use with a receptacle connector mounted to a host circuit board within a chassis of a host system, said receptacle comprising:
 - a housing having a front, a back wall, a top wall, a bottom wall, and side walls and defining a cavity for receiving a module, said bottom wall having a bottom opening with said receptacle connector being disposed therein when said receptacle is mounted to said host circuit board, said back, top, and side walls defining planes which completely contain said receptacle when said receptacle is mounted to said host circuit board; and
 - a plurality of elongated members extending down from said housing past said bottom wall and adapted for electrical connection to said host circuit board such that said walls are electrically connected to said host circuit board.
2. The receptacle of claim 1, wherein said bottom wall covers more than 50% of the bottom area of said receptacle.
3. The receptacle of claim 1, wherein at least one elongated containment member extends from said housing between two of said elongated members, said containment member being electrically conductive and electrically connected to said walls.
4. The receptacle of claim 3, wherein said containment members are symmetrically located on each side of said receptacle and wherein said elongated members are asymmetrically located on each side of said receptacle.
5. The receptacle of claim 3, wherein said containment members are disposed adjacent said bottom opening.
6. The receptacle of claim 1, wherein said housing further comprises resilient grounding tabs disposed at said front of said housing to effect an electrical connection with said chassis of said host system when said receptacle is mounted to said host circuit board.

7. The receptacle of claim 6, wherein said grounding tabs are formed in said top, bottom, and side walls adjacent said front opening.
8. The receptacle of claim 1, wherein said housing further comprises a latch adjacent said front opening, said latch being adapted for both engaging a module to hold said module in said receptacle until said latch is released, and effecting an electrical connection between said module and said housing
9. The receptacle of claim 1, wherein at least said top wall defines holes.
10. The receptacle of claim 9, wherein said holes on said top wall are aligned in two or more rows running front to back thereby defining grounding paths of solid conductive material between the rows.
11. A receptacle for use with a receptacle connector mounted to a host circuit board within a chassis of a host system, said receptacle comprising:
- a housing having a front, a back wall, a top wall, a bottom wall, and side walls and defining a cavity for receiving a module, said bottom wall having a bottom opening with said receptacle connector disposed therein when said receptacle is mounted to said host circuit board, at least said top wall defining holes, said holes being aligned in two or more rows running front to back thereby defining grounding paths of solid conductive material between said rows, said top, back, and side walls defining planes which contain said receptacle connector in its entirety when said receptacle is mounted to said host circuit board, said front having a front opening to receive said module, the walls comprising a conductive material;
 - a plurality of elongated members extending down from said housing past said bottom wall and adapted for electrical connection to a host circuit board such that said walls are electrically connected to said host circuit board; and
 - resilient grounding tabs disposed at said front of said housing to urge against said chassis of said host system when said receptacle is mounted to said host circuit board and thereby effect an electrical connection between said housing and said chassis.

12. The receptacle of claim 11, wherein said housing comprises a discrete upper portion and a discrete lower portion connected to said upper portion.
13. The receptacle of claim 12, wherein said grounding tabs are part of said upper portion.
14. The receptacle of claim 13, wherein said grounding tabs are disposed on at least said side walls and said top wall.
15. The receptacle of claim 11, wherein said bottom wall covers more than 50% of the bottom area of said receptacle.
16. A pluggable module system comprising:
- a receptacle housing having a front, a back wall, a top wall, a bottom wall, and side walls and defining a cavity for receiving a module, said bottom wall having a bottom opening;
 - a receptacle connector electrically connected to said host circuit board and disposed in said bottom opening such that it protrudes into said cavity and is contained in its entirety by the planes defined by said back, top and side walls, said receptacle connector being adapted for electrically interfacing a module to said host circuit board; and
 - a module being adapted for insertion into said receptacle and comprising a planar module circuit board and a module housing, said module housing having a front and back orientation and a top and bottom orientation, said housing having a top module wall, a bottom module wall, a back module wall and side module walls, each of said top module wall, said bottom module wall, and said side module walls being planar, said module circuit board having pads suitable for forming an electrical connection with contacts of said receptacle connector, said pads being enclosed by the planes defined by said top module wall, said bottom module wall, said side module walls, and said back module wall, said front being adapted to receive a connector.

17. The system of claim 16, wherein said module further comprises grounding contacts configured for electrical connection to said housing of said receptacle upon insertion of said module in said receptacle.

18. The system of claim 17, wherein at least said top module wall defines holes which are aligned in two or more rows running front to back thereby defining grounding paths of solid conductive material between the rows, and wherein said grounding paths and grounding contacts cooperate such that, when said module is inserted into said housing, said grounding contacts slide along said paths.

19. The system of claim 16, wherein said module circuit board comprises an edge portion which is accessible in a direction along the same plane as said module circuit board, said pads being disposed on said edge portion, said pads being suitable for forming an electrical connection with said contacts of said receptacle connector, and wherein said receptacle connector comprises a slot for receiving said edge portion and at least two rows of contacts, one row of contacts extending upward into the slot and another row of contacts extending downward into the slot, said contacts being adapted to make an electrical connection with pads on said module circuit board when said module is inserted into the housing.

20. The system of claim 16, further comprising an ejection mechanism comprising a resilient member disposed adjacent the back of said housing, and a retention mechanism comprising a resilient latch disposed on said housing, an actuator slidably connected to said module, and a latching member extending from said module for latching with said resilient latch, said ejection mechanism and said retention mechanism cooperating such that, when said module is inserted into said receptacle, said resilient member becomes loaded and said resilient latch engages said latching member, and when said actuator is pushed backward, said actuator urges said resilient latch from said latching member, thereby allowing said resilient member to unload and urge the module from the receptacle.

21. The system of claim 16, wherein said latching member is configured to shear if said module is forcibly pulled from the housing without releasing said latching mechanism.

22. The system of claim 16, wherein said resilient latch comprises an inclined leading edge for riding over the latching member of the module and interfering with a ramped portion of an actuator of the module.

23. The system of claim 16, wherein said module circuit board being enclosed by the planes of said top module wall, said bottom module wall, said side module walls, and said back module wall and wherein said back module wall only partially covers the back of said module circuit board such that said edge portion is accessible from the back of the module along the plane of said module circuit board.

24. The system of claim 16, wherein said receptacle connector is disposed within the planes defined by the top, back and side module walls when electrically connected to said module circuit board.

25. A pluggable module system comprising:

- a receptacle housing having a front, a back wall, a top wall, a bottom wall, and side walls and defining a cavity for receiving a module, said bottom wall having a bottom opening;

- a receptacle connector electrically connected to said host circuit board and disposed in said bottom opening such that it protrudes into said cavity and is contained in its entirety by the planes defined by said back, top and side walls, said receptacle connector being adapted for electrically interfacing a module to said host circuit board, said receptacle connector comprising a slot for receiving and at least two rows of contacts, one row of contacts extending upward into the slot and another row of contacts extending downward into the slot; and

- a module being adapted for insertion into said receptacle and comprising a planar module circuit board and a module housing, said module housing having a front and back orientation and a top and bottom orientation, said housing having a top module wall, a bottom module wall, a back module wall and side module walls, each of said top module wall, said bottom module wall, and said side module walls being planar, said module circuit board having pads suitable for forming an electrical connection with contacts of the receptacle connector, said pads being enclosed by the planes defined by said top module wall, said

bottom module wall, said side module walls, and said back module wall, said front being adapted to receive a connector, said module circuit board comprising an edge portion which is accessible in a direction along the same plane as said module circuit board and is adapted to be received in said slot of said receptacle connector, said pads being disposed on said edge portion, said pads being suitable for forming an electrical connection with said contacts of said receptacle connector when said edge portion is disposed in said slot, the planes defined by said top, back and side module walls containing said receptacle connector when said edge portion is disposed in said slot.

26. A module for electrically connecting to a mating connector mounted to a host circuit board the module comprising:

a housing having a front and back orientation and a top and bottom orientation, said housing having a top wall, a bottom wall, a back wall and side walls, each of said top wall, said bottom wall, and said side walls being planar;

a planar module circuit board having pads suitable for forming an electrical connection with contacts of the mating connector, said pads being enclosed by the planes defined by said top wall, said bottom wall, said side walls, and said back wall; and

a connector interface at the front of said housing, said connector interface being adapted for receiving a connector of an electrical or optical conductor.

27. The module of claim 26, wherein said pads are disposed on an edge of said module circuit board.

28. The module of claim 26, wherein said pads are adapted to mate with said mating connector through movement of the module to said mating connector along a plane parallel to the plane of said circuit board.

29. The module of claim 26, wherein said back wall only partially covers the back of said module circuit board such that said edge portion is accessible from the back of the module along the plane of said module circuit board.

30. The module of claim 26, further comprising:
grounding contacts configured for electrical connection to said housing of said
receptacle upon insertion of said module in said receptacle.
31. The module of claim 26, wherein said grounding contacts are disposed at least on said
top wall and said sides walls.
32. The module of claim 26, further comprising an actuator slidably connected to said
module and a latching member extending from said module for latching with a resilient latch
of a receptacle, when said module is inserted into said receptacle, said resilient latch engages
said latching member, and when said actuator is pushed backward, said actuator urges said
resilient latch from said latching member, thereby allowing said resilient member to unload
and urge the module from the receptacle.
33. The module of claim 16, wherein said latching member is configured to shear if said
module is forcibly pulled from the receptacle without released from said resilient latch
34. A module for electrically connecting to a mating connector mounted to a host circuit
board the module comprising:
a housing having a front and back orientation and a top and bottom orientation, said
housing having a top wall, a bottom wall, a back wall and side walls, each of
said top wall, said bottom wall, and said side walls being planar;
a planar module circuit board having pads disposed on an edge thereof suitable for
forming an electrical connection with contacts of the mating connector, said
pads being enclosed by the planes defined by said top wall, said bottom wall,
said side walls, and said back wall, said pads being adapted to mate with said
mating connector through movement of said module relative to said mating
connector parallel to the plane of said circuit board, said back wall only
partially covering the back of said module circuit board such that said pads are
accessible from the back of the module along the plane of said module circuit
board;
a connector interface at the front of said housing, said connector interface being
adapted for receiving a connector of an electrical or optical conductor; and

grounding contacts for forming an electrical connection with a receptacle when the module is inserted in the receptacle.

35. The module of claim 34, wherein said grounding contacts are resilient.
36. The module of claim 35, wherein grounding contacts are integral to said housing.
37. The module of claim 36, wherein said grounding contacts are disposed at least on said top wall and said sides walls.